

Usability Testing Report for COCC Barber Library's Federated Search

Introduction

In summer 2018, the Integrated Library System & Discovery Services Librarian ("Systems Librarian") at Barber Library developed an experimental search interface on the library's Virtual Private Server (<https://barber.cocc.edu/search>). This interface follows a federated search or "bento box" model, in which each keyword search is submitted to multiple databases via API and the results are presented in labeled boxes.

Image 1: Screenshot of a search for "jane austen"

The screenshot displays the COCC Barber Library search interface. At the top, the header includes the college logo, navigation links (Directory, Student Login, Employee Login), and a search bar. Below the header is a dark navigation bar with links to Admissions, Academics, Services, Campuses, Continuing Education, Library, COCC Foundation, and About. A breadcrumb trail shows the path: HOME / DEPARTMENTS / LIBRARY / SEARCH.

The main content area is titled "Library Search Beta: *jane austen*". It features a search bar with the text "biology" and a magnifying glass icon. Below the search bar are tabs for "Articles & More", "Books", "Videos & Audio", "Images", "News", and "Statistics".

The results are organized into three main sections:

- Books, Videos, & More:** This section shows 2,865 results. The first five results are listed:
 1. [Pride and Prejudice](#) (eBook)
Jane Austen; p.333; 1998
 2. [Novels for students. Volume 14 : presenting analysis, context, and criticism on commonly studied novels](#) (eBook)
©2002
 3. [Novels for students. Volume 1 : presenting analysis, context, and criticism on commonly studied novels](#) (eBook)
©1997
 4. [British writers classics. Volume I](#) (eBook)
2003
 5. [Jane Austen](#) (Print Book)
1980]A button at the bottom of this section reads "More from the Barber Library & Summit Catalog »".
- Reference Articles:** This section shows 3 results.
 1. [Austen, Jane](#) (Reference Entry)
The Palgrave Macmillan Dictionary of Women's Biography; 342 words
 2. [Austen, Jane](#) (Reference Entry)
Chambers Biographical Dictionary; 527 words
 3. [Austen, Jane](#) (Reference Entry)
Gale Biographies: Popular People; 1445 wordsA button at the bottom of this section reads "More from Credo Reference »".
- Scholarly Articles:** This section shows 2,563 results.
 1. [Henry Crawford as Master Betty. Jane Austen on the "Disabling" of Shakespeare.](#) (Article)
Eighteenth Century Fiction; 2017
 2. [The Sensation of Language in Jane Austen's Persuasion.](#) (Literary Criticism)
Eighteenth Century Fiction; 2017
 3. [Jane Austen: The Secret Radical / The Making of Jane Austen.](#) (Literary Criticism)
European Romantic Review; 2018

On the right side of the interface, there is a "TOPIC PAGE" for "Austen, Jane. 1775-1817". It includes a small image of a book cover and a brief description: "English novelist. She described her raw material as 'three or four families in a Country Village'. Sense and Sensibility was published in 1811, Pride... (Continue)".

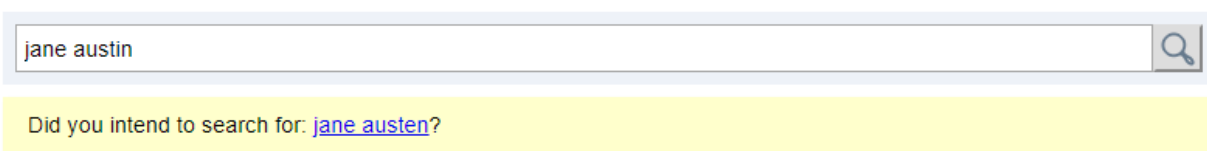
Following the design of Google, Bing, and other popular search engines, the interface divides resources into six tabs across the top of the page: Articles & More, Books, Videos & Audio, Images, News, and Statistics.

- **Articles & More** contains results from Ex Libris Primo (“Books, Videos, & More”), Credo Reference (“Reference Articles”), EBSCO Academic Search Premier (“Scholarly Articles”), and LibGuides (“Guides”)
- **Books** contains results from Primo for the resource types Print Books and eBooks
- **Videos & Audio** contains results from Primo for the resource types DVDs, Streaming Videos, and Audio CDs
- **Images** opens a keyword search of Encyclopaedia Britannica Image Quest in a new tab
- **News** contains results from Gale InfoTrac Newsstand (“Newspapers and Magazines”), EBSCO Points of View Reference Center (“Controversial Issues”), and ProQuest Historical New York Times (“Historical New York Times”)
- **Statistics** contains results from Statista (“Statistics and Infographics”)

Before making the interface publicly accessible, the Systems Librarian performed usability testing with five library assistants, all current students. Feedback was uniformly positive. The assistants said they liked how the results were laid out, organization was “clear” and “streamlined,” and they preferred the new interface to the current website.

Two usability issues were observed during this initial testing. First, two of the five assistants misspelled keywords and received no results for their searches. To address this, a “Did You Mean” suggestion was added below the search bar to catch common misspellings.

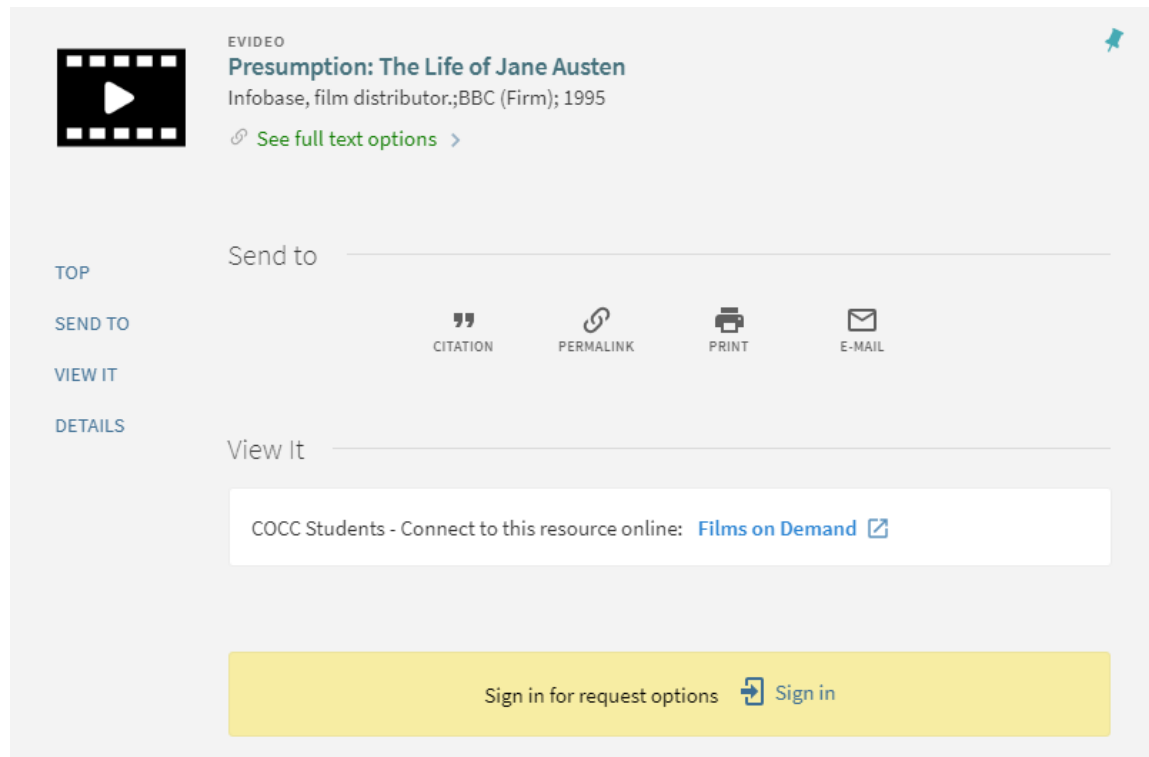
Image 2: Screenshot of a Did You Mean suggestion for “jane austin”



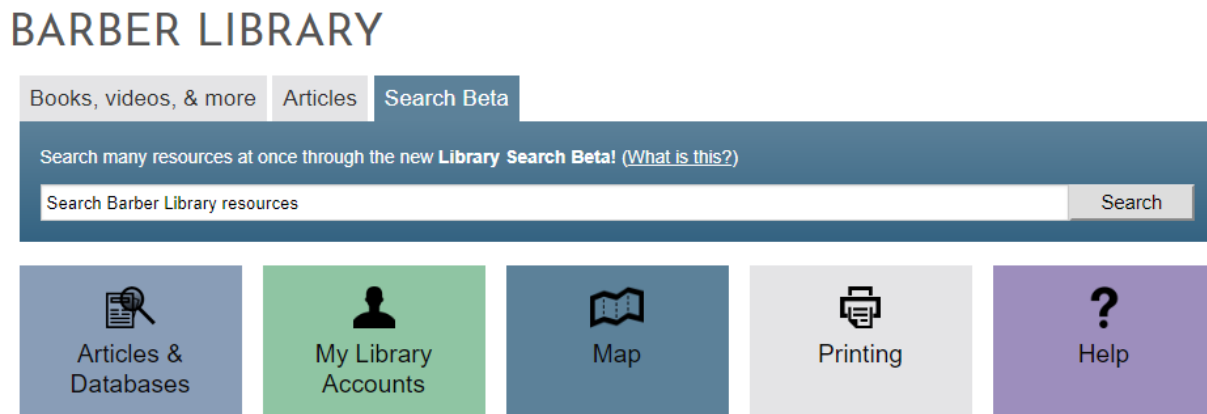
Second, when searching for streaming videos, two assistants landed on the appropriate catalog record but attempted to click on the Resource Type icon in the top left, and they did not see the

link to the video on Films on Demand below the sign-in prompt. To address this, the Resource Type icon was restyled to show the default cursor instead of the “pointer” cursor on hover, and the sign-in prompt was moved below the link to the resource online.

Image 3: Screenshot of a streaming video catalog record



Before the start of the academic term Fall 2018, a form to search the new interface was added as a third tab to the library homepage search widget, and a [Qualtrics survey](#) was created to collect feedback. The interface and survey were advertised through a mass email to all faculty, a post to the shared employee folder Bobcat Community, and a demonstration at the library’s fall open house.

Image 4: Screenshot of the Search Beta tab on the homepage

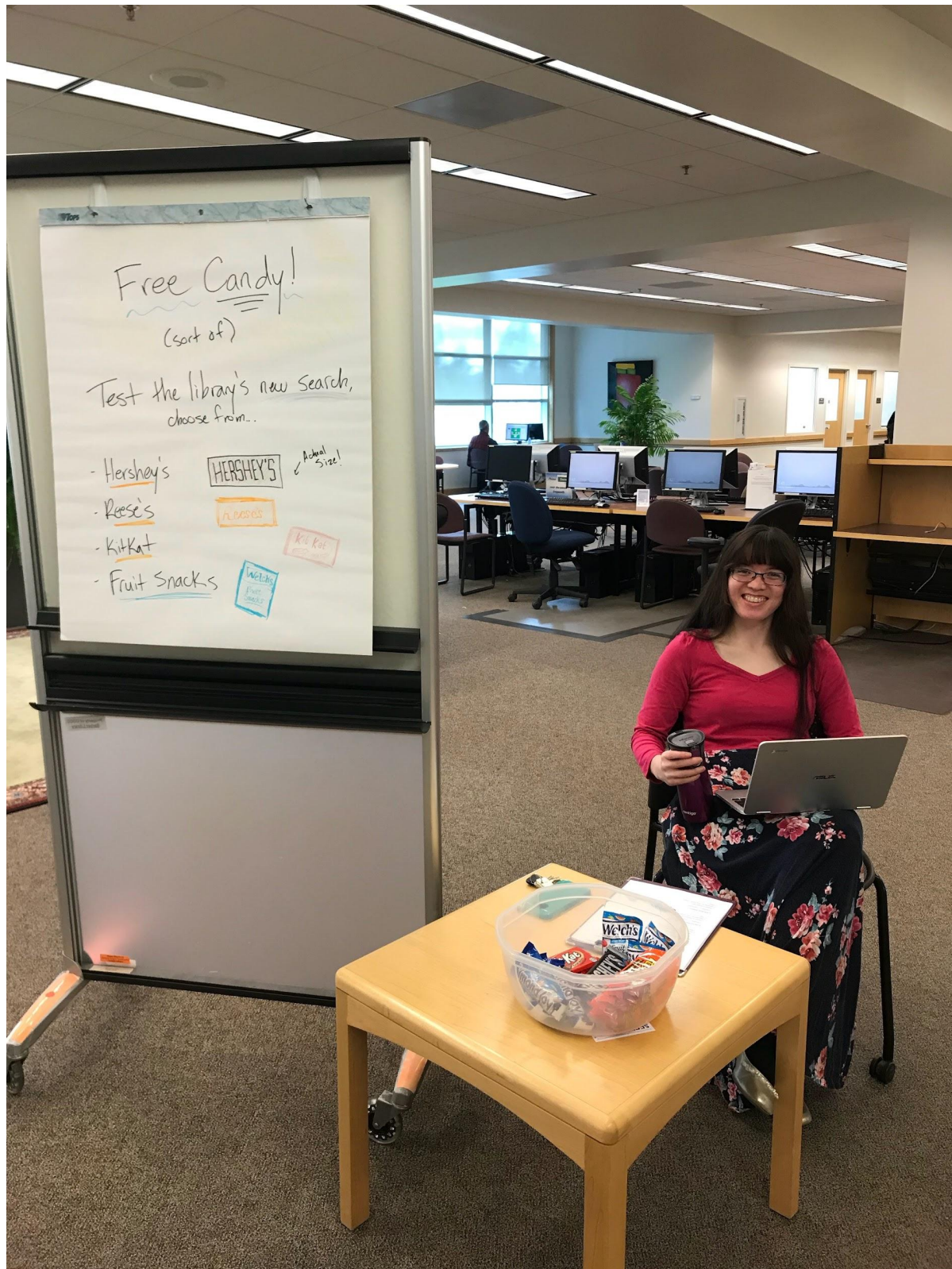
Methods

A/B/C Testing was performed by the Systems Librarian in the reference area of Barber Library during the second and third weeks of Fall term. The goals of the testing were to (a) identify usability issues with the new interface, and (b) compare the usability of the new interface to two other potential interfaces: the current website as-is, and the current website with articles added to the library catalog.

- Day 1, New Interface: Monday, October 1, 2018, 12 pm - 2 pm
- Day 2, Current Website: Tuesday, October 2, 2018, 12 pm - 2 pm
- Day 3, Primo with Articles: Wednesday, October 3, 2018, 12 pm - 2 pm
- Day 4, New Interface with Autocomplete: Tuesday, October 9, 2018, 12 pm - 2 pm
- Day 5, New Interface with Autocomplete: Wednesday, October 10, 2018, 11 am - 1 pm

A large poster advertised the study. Users who completed the 5-minute test were offered one king-sized candy bar or packet of fruit snacks of their choice. A total of 34 students and staff volunteered: 11 on Day 1, 10 on Day 2, 8 on Day 3, 3 on Day 4, and 2 on Day 5.

Image 5: Photo of testing setup



Testing was conducted at the stand-up public kiosks by the Reference Desk. Users were asked to complete the following 8 tasks.

1. Suppose you are writing a paper about the life and works of Jane Austen for an English class. How would you begin your research?
2. Can you stream a documentary about Jane Austen's life?
3. Can you find any relevant statistics for data-driven graphics?
4. How about images?
5. Search for *Pride and Prejudice and Zombies*. Is the print book available at COCC?
6. Can you find reviews of the book?
7. Can you find the movie soundtrack on CD?
8. Where would you go if an instructor told you to research Jane Austen using the database Gale Literary Sources?

The Systems Librarian observed and took notes about the participants while they attempted to complete the tasks. Users were not given any instructions about how to complete the tasks. The Systems Librarian gave encouraging feedback for every task successfully completed (e.g., “Perfect!” “Great, you found it!”) but did not respond to questions or comments fishing for hints (e.g., “Is that how you spell it?” “Am I on the right track?”).

On days testing the new interface specifically, participants were told to use the Search Beta tab of the homepage search widget to answer the questions. On all other days, participants were told to use “the Barber Library website” and were not directed to any interface in particular.

After Day 3, an autocomplete dropdown was added to the new interface, utilizing the MediaWiki API to suggest titles of Wikipedia articles. The new interface with autocomplete was tested again on Days 4 and 5 with low participation, due to dwindling foot traffic after the initial “rush” at the start of the term.

Image 6: Screenshot of autocomplete suggestions for “jane aust”

BARBER LIBRARY

Books, videos, & more
Articles
Search Beta

Search many resources at once through the new **Library Search Beta!** ([What is this?](#))

Jane Austen
Jane Austen in popular culture
Jane Austen's House Museum
Jane Austen College
Jane Austen fan fiction

?

Help

Students

- Resources
- Tutorials
- Interlibrary Loan (ILL)
- Checking Out Library Items

Faculty

- Information Literacy
- Collection Development
- Course Reserves
- Open Educational Resources

Staff & Community

- Staff
- Community Members
- College Now
- OSU & Summit Patrons

Results

Looking at total completion rates, users performed better on most tasks using the new interface compared to the current website or the current website plus articles in the catalog.

Table 1: Completion rates for all tasks

Task	New Interface	New Interface with Autocomplete	Current Website	Current Website + Primo with Articles
Research Jane Austen	54.55%	60.00%	50.00%	37.50%
Stream documentary	45.45%	60.00%	40.00%	62.50%
Find statistics	36.36%	40.00%	30.00%	12.50%
Find images	63.64%	60.00%	10.00%	37.50%
Find print book	54.55%	80.00%	80.00%	75.00%

Find book reviews	27.27%	60.00%	20.00%	25.00%
Find movie soundtrack	45.45%	40.00%	0.00%	0.00%
Find Gale Literary Sources	45.45%	20.00%	30.00%	75.00%

The Effects of Misspelling

Task completion was highly dependent on whether the users spelled keywords correctly. Only 15 of the 34 participants (44%) spelled the name Jane Austen correctly, and these users performed much better on the first four tasks than users who did not.

Table 2: Completion rates for participants who spelled Jane Austen correctly, tasks 1-4

Task	New Interface	New Interface with Autocomplete	Current Website	Current Website + Primo with Articles
Research Jane Austen	100.00%	100.00%	80.00%	66.67%
Stream documentary	80.00%	100.00%	60.00%	66.67%
Find statistics	60.00%	50.00%	60.00%	33.33%
Find images	80.00%	100.00%	20.00%	0.00%

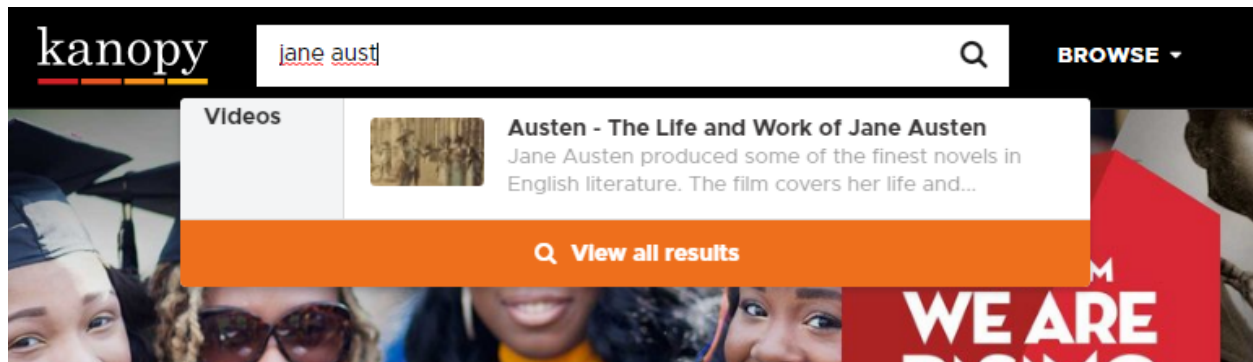
Table 3: Completion rates for participants who spelled Jane Austen incorrectly, tasks 1-4

Task	New Interface	New Interface with Autocomplete	Current Website	Current Website + Primo with Articles
Research Jane Austen	20.00%	33.33%	20.00%	20.00%
Stream documentary	20.00%	33.33%	20.00%	60.00%
Find statistics	20.00%	33.33%	0.00%	0.00%
Find images	60.00%	33.33%	0.00%	60.00%

All 19 participants who misspelled Jane Austen typed the surname “Austin” with an “i.” Of these, 2 of the 9 participants testing the new interface clicked a “Did You Mean” suggestion to correct their spelling during the first task, and 1 of the 9 clicked the suggestion in a later task. Of the 10 participants testing variations of the current website who misspelled Jane Austen, 6 verbally

expressed doubts about the accuracy of their spelling after seeing results, and 5 discovered the correct spelling in later tasks through autocomplete drop-downs in databases like Image Quest and Kanopy.

Image 7: Screenshot of Kanopy autocomplete suggestion



After searching Kanopy for “jane austin” and seeing no results one user said, “I could also just be spelling Jane Austen wrong.” After deleting the last two letters and seeing the autocomplete suggestion for a documentary, he said, “I was, as it turns out!”

Similarly, performance on tasks 5 through 7 was slightly dependent on correct spelling of the word “prejudice,” though the difference was less pronounced and uniform across tasks. A majority of participants, 23 of the 34 (70.59%) did spell the word correctly, but the remaining 11 typed variations like “prejidue,” “predujice,” or “predjudice.” Many of these variations were too different from the correct spelling to be identified by the Did You Mean API, so the users received no feedback to suggest their spelling was incorrect and assumed there were simply no results for that title.

The Efficacy of Autocomplete Suggestions

On the Day 1 test of the new interface, 5 of the 11 participants (45%) misspelled “Jane Austen,” and 3 of the 11 (27%) misspelled “prejudice.” On Days 4, and 5, after autocomplete suggestions were added, 3 of the 5 participants (60%) misspelled “Jane Austen” and 1 of the 5 misspelled “prejudice” (20%).

Even with the autocomplete, similar percentages of participants misspelled these keywords because (a) they were looking down at the keyboard while typing, or (b) they considered the suggestions, but proceeded with the misspelling anyway.

Beyond Completion Rates: Correct Actions

Looking beyond completion rates, most participants testing the new interface performed actions that *would have* allowed them to complete the tasks, but many still failed because they (a) misspelled a keyword, (b) did not see the answer on the screen, or (c) did not follow the link to the final destination with the answer. For example, some assumed the library has the print book *Pride and Prejudice and Zombies* because the link to the Summit record appeared, but they did not click through to the catalog to see the availability statement.

Table 5: Percentages of participants who performed correct actions to complete tasks*

Task	New Interface	New Interface with Autocomplete	Current Website	Current Website + Primo with Articles
1. Research Jane Austen	100.00%	100.00%	100.00%	87.50%
2. Stream documentary	81.82%	80.00%	70.00%	87.50%
3. Find statistics	45.45%	60.00%	20.00%	0.00%
4. Find images	90.91%	80.00%	10.00%	50.00%
5. Find print book	90.91%	80.00%	100.00%	87.50%
6. Find book reviews	72.73%	80.00%	20.00%	25.00%
7. Find movie soundtrack	81.82%	100.00%	0.00%	0.00%
8. Find Gale Literary Sources	54.55%	60.00%	30.00%	87.50%

* Examples of “correct actions” for each task:

1. Search Primo, Academic Search Premier, Credo, etc.
2. Click Videos & Audio tab of new interface; search Primo for eVideo records; search Films on Demand or Kanopy
3. Click Statistics tab of new interface; find statistical analysis articles in a database; find a book with statistics in Primo
4. Click Images tab of new interface; search Image Quest or Artstor directly

5. Click the Articles & More or Books tabs in new interface; search Primo by keyword or title
6. Click the News tab of new interface; search ASP or news databases directly
7. Click Videos & Audio tab of new interface and look in Audio CDs box; search WorldCat
8. Search for “gale literary sources” in Articles & More tab of new interface; visit Articles & Databases (LibGuides A-Z) and locate Gale Literary Sources under “G”

These results indicate that the layout of the new interface is not the source of the low completion rates, as the majority of participants clicked to the correct area to find the answers they were looking for.

Conclusions

Students can find a variety of useful resources more easily using the new interface than they can using the current website or Primo with articles.

Participants testing the current website could find books and videos through the catalog and scholarly articles through ASP, but they had difficulty finding other resource types (images, statistics, items available for interlibrary loan).

The resources found through Primo and ASP also tended to be less relevant and useful for the proposed task of writing a paper about Jane Austen for an English class. For example, while finding original research articles for “Jane Austen” through ASP technically satisfied the requirements of the first task, reference sources like Credo would be more useful for an undergraduate-level paper. And while print dissertations analyzing a textual mining of Austen’s works technically satisfied the third task, Statista is easier for students to use...but the database is currently buried deep within the website where no one will find it naturally.

Once students are in a search interface, they expect to find everything in the same place.

On Days 2 and 3 for testing the current website, once students had entered a search interface (Primo, ASP, Credo) they tried to use it to find *everything*: books, streaming videos, statistics, and images. Two participants tried to use ASP or Credo to search for library print holdings.

Students testing the current website who had been taught in their writing courses to go straight to “Articles and Databases” repeatedly clicked on “Articles and Databases” for every task, and usually used the ASP widget at the top exclusively. Many did not explore the website further to find other types of resources.

Primo is not a viable option for “one stop” searching. Even with articles added to the results via the Primo Central Index, participants were not able to find the electronic resources they were looking for. For example, applying the resource type “image” for the fourth task brought up a single record for a citation of an image, but no actual images. Not shown in this study, but observed during informal testing, is that many fulltext links land on title-level records in databases instead of the actual article cited in Primo.

While the new interface does provide most resource types in one place, it is still a “sampler platter” of library resources, not a Google-like engine for *all* library resources. It will still be necessary to instruct students to explore beyond the interface to perform more advanced searches.

“Did You Mean” and autocomplete suggestions are necessary features, but they can’t guarantee users will spell keywords correctly.

Only two participants clicked the Did You Mean suggestion after misspelling a word. When the misspelling was too far away from the correct spelling (e.g., “predjidue”), the Did You Mean API couldn’t identify it. And even with the autocomplete suggestions in the new interface, many

participants still misspelled “Austen” and “prejudice” because they didn’t see or didn’t heed the suggestions.

Some participants who had difficulty spelling “prejudice” made comments like, “It’ll correct me, right?” and “That looks super wrong...let’s see if it’ll correct me.” They expected the search engine to spell-check for them, and to return relevant results even if the keywords were not spelled correctly. This is not a feature the library can provide.

Students believe Google has all the answers.

A disconcerting number of students responded to questions by saying they would “Google that.” Of the 34 total participants, 7 of them (20%) tried to Google “Gale Literary Sources” and then search for “Jane Austen” within the Gale product page. An additional 2 participants (5%) tried to search for Gale Literary Sources in the COCC website search. On the days testing the current website variations, many failed to find images through the library because they didn’t even try; they went straight to Google Images (or Bing).

Potential Future Improvements

Search APIs directly wherever possible, instead of going through Ex Libris Primo.

In the second task, spotting the fulltext links in Primo records for streaming videos was difficult for students. Currently the Infobase API has several issues that preclude using it for this interface (for example, it returning tens of thousands of results all at once, with no way of limiting to a manageable number), but once those issues are fixed, the interface should provide direct links to Films on Demand videos instead of going through intermediary Primo pages.

Add descriptive text and images to autocomplete suggestions.

At least one participant testing the new interface with autocomplete saw the suggestions for “Jane Austen,” but instead selected “Jane Austin,” which is the title of a disambiguation Wikipedia article suggesting that Jane Austin “may refer to” (1) a misspelling of Jane Austen, or (2) Jane G. Austin, the lesser-known American writer of Pilgrim stories. With only the two names displayed without context, this user didn’t know she was looking for Jane Austen.

The MediaWiki API also provides short descriptions that could be used to differentiate between options. In the [2010 Orbis Cascade Alliance prototype of a Freebase autosuggester](#), hovering over an option displayed more information with a picture and details. (Freebase is now deprecated, and the data has been absorbed into MediaWiki.)

